

VOLUME 5 • 1987/88

BIOLOGICAL OCEANOGRAPHY

AN INTERNATIONAL JOURNAL

597590



RICHARD L. HAEDRICH
EDITOR-IN-CHIEF

Library
NOAA, National Marine Fisheries Service
SWFC Honolulu Laboratory F/SWC2
2570 Dole Street
Honolulu, HI 96822-2396



TAYLOR & FRANCIS

NEW YORK • PHILADELPHIA • WASHINGTON, D.C. • LONDON

BIOLOGICAL OCEANOGRAPHY

EDITOR-IN-CHIEF

Richard L. Haedrich, Newfoundland Institute for Cold Ocean Science

EDITORS

Robert S. Carney, Louisiana State University; **Daniel M. Cohen**, Los Angeles County Museum of Natural History; **Victor A. Gallardo**, Universidad de Concepcion; **Kouichi Kawaguchi**, University of Tokyo; **Nigel R. Merrett**, Institute of Oceanographic Sciences; **Eric L. Mills**, Dalhousie University; **Peter S. Ortner**, NOAA; **Nikolai V. Parin**, Institute of Oceanology; **William G. Percy**, Oregon State University; **Linda H. Pequegnat**, Texas A&M University; **Annelies C. Pierrot-Bults**, Universiteit van Amsterdam; **Dennis A. Powers**, The Johns Hopkins University; **Gilbert T. Rowe**, Brookhaven National Laboratory; **Myriam Sibuet**, Centre National pour l'Exploration des Oceans; **William Silvert**, Bedford Institute of Oceanography; **Theodore J. Smayda**, University of Rhode Island; **George N. Somero**, Scripps Institution of Oceanography; **Hjalmar Thiel**, Universitat Hamburg; **Torben Wolff**, Zoologisk Museum.

Abstracted and/or Indexed in: Aquatic Sciences and Fisheries Abstracts; Biological Abstracts; BioSciences Information Service; Current Awareness in Biological Sciences; Current Contents/Agricultural, Biology & Environmental Sciences; and Refertinivyi Zhurnal.

Editorial Office: Richard L. Haedrich, Newfoundland Institute for Cold Ocean Science, 4 Clark Place, St. John's, Newfoundland A1B 3X7 Canada.

Publishing, Advertising and Subscription Offices: Taylor & Francis, 3 East 44th Street, New York, NY 10017; or Taylor & Francis, Ltd., Rankine Road, Basingstoke, Hampshire RG24 0PR, England

BIOLOGICAL OCEANOGRAPHY (ISSN 0196-5581) is published bimonthly by Taylor & Francis, Ltd., 4 John Street, London, WC1N 2ET. Annual 1988 (Volume 6) £70 US \$225. Personal subscription rate £39 US \$70. (Available to home address only).

Application to mail at second class postage rate pending at Jamaica, New York 11431.

US Postmaster: send address changes to BIOLOGICAL OCEANOGRAPHY, Publications Expediting, Inc., 200 Meacham Avenue, Elmont, New York, 11003.

Airfreight and mailing in the USA by Publications Expediting, Inc., 200 Meacham Avenue, Elmont, New York, 11003.

Dollar rates apply to subscribers in all countries except the U.K. and the Republic of Ireland, where the sterling price applies. All subscriptions are payable in advance and all rates include postage. Journals are sent by air to the USA, Canada, Mexico, India, Japan and Australasia at no extra cost. Subscriptions are entered on an annual basis, i.e. January to December. Payment may be made by sterling check, dollar check, international money order, National Giro, or credit card (AMEX, VISA, Mastercard/Access.)

Orders originating in the following territories should be sent direct to the local distributor.

Australia—R. Hill & Son, Ltd., 117 Wellington Street, Windsor, Victoria 3181.

India—Universal Subscription Agency Pvt. Ltd., 101–102 Community Centre, Malviya Nagar Extn., Post Bag No. 8, Saket, New Delhi.

Japan—Kinokuniya Company Ltd., Journal Department, P.O. Box 55, Chitose, Tokyo 156

New Zealand—R. Hill & Son, Ltd., Private Bag, Newmarket, Auckland 1.

USA, Canada and Mexico—Taylor & Francis, Inc., 242 Cherry Street, Philadelphia, PA 19106-1906.

UK and all other territories—Taylor & Francis, Ltd., Rankine Road, Basingstoke, Hampshire RG24 0PR.

Copyright:

The appearance of the code at the top of the first page of each article in this journal indicates the copyright owner's consent that a single copy of the article may be made for personal use. This consent is given on the condition that for multiple copies of the article the copier pay a fee of \$3.00 per copy through the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale. No part of this publication may be stored on an electronic retrieval system or transmitted electronically without the prior written permission of the publisher.

Copyright © 1988 Taylor & Francis

Printed by Taylor & Francis (Printers), Basingstoke, England

Author Index

Bailey, K. M., 99

Birt, V. L., 153

Billett, D. S. M., 273

Cairns, D. K., 153, 261

Cammen, L. M., 215

Fleminger, A., 43

Furnas, M. J., 163

Haedrich, Richard L., 297

Harding, Jr., L. W., 183

Hollowed, Anne Babcock, 99

Hulsemann, K., 43

Ignatiades, L., 229

Jahn, Andrew, E., 297

Legendre, L., 13

Merrett, N., 137

Montevocchi, W. A., 153

Pagou, Kalliopi, 229

Schalk, P. H., 1

Scheltema, R. S., 85

Townsend, D. W., 215

Tyler, P. A., 273

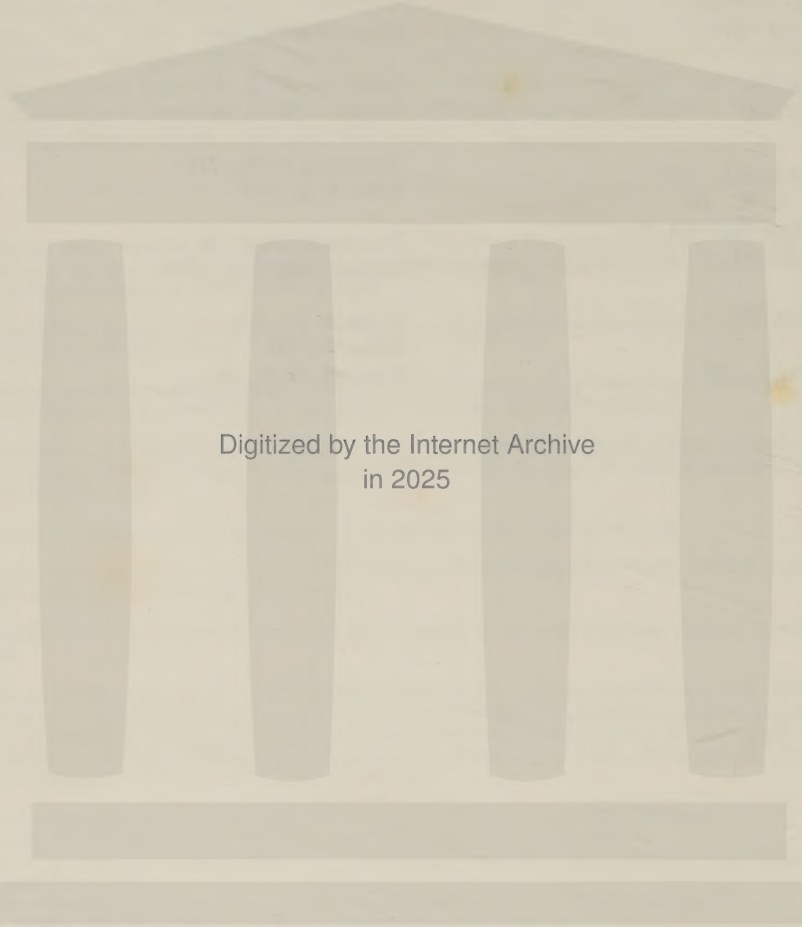
Van der Spoel, S., 29

Venugopalan, V. P., 133

Wagh, A. M., 133

White, B., 243

Woosted, W. S., 99



Digitized by the Internet Archive
in 2025

Contents Index

Monsoon Related Changes in Zooplankton Biomass in the Eastern Banda Sea and Aru Basin P. H. Schalk	1
Multidimensional Contingency Table Analysis as a Tool for Biological Oceanography Louis Legendre	13
Five Pteropod Species New for the Gulf of Alaska S. Van der Spoel	29
Geographical Variation in <i>Calanus helgolandicus</i> s.l. (Copeopoda, Calanoida) and Evidence of Recent Specification of the Black Sea Population A. Fleminger and K. Hulsemann	43
Adaptions of <i>Ptychodera Flava</i> and <i>Ptychodera Bahamensis</i> (Enteropneusta: Ptychoderidae) for Dispersal and Colonization Rudolf S. Scheltema	85
Patterns in Recruitment of Marine Fishes in the Northeast Pacific Ocean Anne Babcock Hollowed, Kevin M. Bailey and Warren S. Wooster ...	99
Cilicea Latreillei Leach: A Little Known Fouling Sphaeromatid From Bombay High, Arabian Sea V. P. Venugopalan and A. B. Wagh	133
A Zone of Faunal Change in the Eastern Atlantic: A Response to Seasonality in Production? N. R. Merrett	137
Dietary Changes of Seabirds Associated with Local Fisheries Failures W. A. Montevecchi, V. L. Birt and D. K. Cairns	153
Photosynthetic Characters of Coral Sea Picoplankton (<2 μ m size fraction) Miles J. Furnas	163
Carbon Metabolism in Estuarine Phytoplankton: Regulation of Photosynthetic Fixation Patterns Lawrence W. Harding, Jr.	183
Potential Importance of the Timing of Spring Plankton Blooms to Benthic-Pelagic Coupling and Recruitment of Juvenile Demersal Fishes David W. Townsend and Leon M. Cammen	215
Phytoplankton Seasonality Patterns in Eutrophic Marine Coastal Waters Lydia Ignatiades and Kalliopi Pagou	229
Oceanic Anoxic Events and Allopatric Speciation in the Deep-Sea Brian White	243
Seabirds as Indicators of Marine Food Supplies David K. Cairns	261

The Reproductive Ecology of Esalipodid Holothurians from the N.E.

Atlantic

P. A. Tyler and D. S. M. Billett 273

Notes on the Pelagic Squaloid Shark, *Isistius brasiliensis*

Andrew E. Jahn and Richard L. Haedrich 297